



**The decision on the application to carry out a decommissioning project on the
CONSORT reactor at Imperial College Silwood Park Campus under the Nuclear
Reactors (Environmental Impact Assessment for Decommissioning)
Regulations 1999 (as amended)**

Project Assessment Report ONR – DFW – PAR – 15 – 005
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EXECUTIVE SUMMARY

The Nuclear Reactors (Environmental Impact Assessment for Decommissioning) Regulations (EIADR) requires the licensee to undertake an environmental impact assessment, prepare an environmental statement that summarises the environmental effects of the project, and apply to the Office for Nuclear Regulation for consent to carry out a decommissioning project.

Imperial College of Science, Technology and Medicine applied to the Office for Nuclear Regulation for consent to carry out the decommissioning of the CONSORT reactor at the Silwood Park Campus in January 2015. The Office for Nuclear Regulation undertook a public consultation on the environmental statement.

The Office for Nuclear Regulation was of the opinion that the environmental statement submitted and in support of the consent contained sufficient information on which to base its decision to grant consent.

The Office for Nuclear Regulation took all relevant factors into account when reaching its decision to grant consent. These included the: adequacy of the information provided in the environmental statement and supporting evidence; the conclusion that environmental benefits outweigh detriments; the prediction that there would be no significant effects on the environments of other EEA States ; and the recognition that certain issues would be covered elsewhere, through other regulatory regimes.

The conditions attached to the consent relate to mitigation measures to prevent, reduce or, if possible, offset adverse environmental effects of the project. Succinctly, Imperial College of Science, Technology and Medicine must prepare an annual environmental management plan that describes mitigation measures in use, reports on their implementation and effectiveness, and reports on changes to such measures in light of experience. The Office for Nuclear Regulation must be notified by the licensee in advance of any significant change to a mitigation measure to control any major adverse effects on the environment. A copy of the environmental management plan and its subsequent revisions must be sent by the licensee to the Office for Nuclear Regulation, additionally the licensee shall make the environmental management plan available to the public.

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FOREWORD

This document reports on the decision taken by the Office for Nuclear Regulation (ONR) to grant consent for a decommissioning project at Imperial College Silwood Park Campus to the licensee, Imperial College of Science, Technology and Medicine, under the Nuclear Reactors (Environmental Impact Assessment for Decommissioning) Regulations 1999 (as amended).

The process of assessing the potential environmental impacts of the project has involved extensive public consultation. The process has been open and inclusive and I take this opportunity to thank everyone who has been involved in this important work, especially those who took the time to send comments on the documentation provided by the licensee.

All of us, and particularly the local population, have a keen and vested interest in the avoidance or minimisation of potential environmental impacts during the decommissioning of the CONSORT reactor at Imperial College Reactor Centre. ONR has attached conditions to the consent to ensure the continued effective management of the environmental impact of the project. This indicates a requirement to make available to ONR and the public an annual Environmental Management Plan that provides information on the progress of the decommissioning work and the measures being used to minimise the environmental impact. Experience so far has shown that this provides an effective means of managing potential environmental impacts.

During our decision-making process, we have strived to be open and transparent. Openness and transparency will continue to be a key factor in managing environmental impacts throughout this decommissioning project. My intent is to provide clarity as to the reason for our decision and trust that this report proves helpful in this regard.



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SUMMARY

The Environmental Impact Assessment Directive 85/337/EEC^[1], (as amended by Council Directive 97/11/EC^[2] and Council Directive 2003/35/EC^[3]), sets out a framework on the assessment of the effects of certain public and private projects on the environment. Additionally, it sets out a framework for public participation in respect of drawing up certain plans and projects relating to the environment. The Directive is implemented in Great Britain for decommissioning nuclear reactor projects by the Nuclear Reactors (Environmental Impact Assessment for Decommissioning) Regulations 1999, as amended in 2006.

The intention of the Environmental Impact Assessment and Regulations is to involve the public through consultation in considering the potential environmental impacts of a decommissioning project, and to make the decision-making process on granting consent open and transparent.

The Nuclear Reactors (Environmental Impact Assessment for Decommissioning) Regulations (EIADR) requires the licensee to undertake an environmental impact assessment, prepare an environmental statement that summarises the environmental effects of the project, and apply to the ONR for consent to carry out a decommissioning project. There is an optional stage where the licensee may request from the ONR an opinion on what the environmental statement should contain (called a pre-application opinion).

Imperial College of Science, Technology and Medicine applied to the Health and Safety Executive (HSE)* for a pre-application opinion in April 2007 and then in 2015 applied to ONR for consent to carry out the decommissioning of the CONSORT reactor at the Silwood Park Campus and provided an environmental statement in January 2015. ONR undertook a public consultation on the environmental statement, this involved 27 organisations.

ONR was of the opinion that the environmental statement submitted provided sufficient information on which to base its decision. Copies of the environmental statement are available for public inspection at public libraries close to the Silwood Park Campus, and the Knowledge Centre at ONR headquarters in Bootle for a period of one year from the date of the Consent granted by ONR (that is, until July 2016). An electronic copy of the decision report will remain available on the ONR website at <http://www.onr.org.uk/eiadr.htm>.

ONR took relevant factors into account when reaching its decision to grant consent. In brief, these were: the adequacy of the information provided in the environmental statement and supporting evidence; the conclusion that environmental benefits would far outweigh detriments; the prediction that there would be no significant effects on the environments of

other countries; and the recognition that some issues would be adequately covered elsewhere, such as through other regulatory regimes.

*HSE was the enforcing authority for EIADR until 31 March 2014. Responsibility transferred to ONR on 1st April 2014.

The conditions attached to the Consent relate to mitigation measures to prevent, reduce or, if possible, offset adverse environmental effects of the project. Succinctly, Imperial College must prepare an annual environmental management plan that describes mitigation measures in use, reports on their implementation and effectiveness, and reports on changes to such measures in light of experience. ONR Regulation must be notified by the Licensee in advance of any significant change to a mitigation measure to control any major adverse effects on the environment. A copy of the environmental management plan and its subsequent revisions must be sent by the licensee to the Office for Nuclear Regulation, additionally the licensee shall make the environmental management plan available to the public.

INTRODUCTION

1. The Environmental Impact Assessment (EIA) Directive 85/337/EEC, (as amended by Council Directive 97/11/EC and Council Directive 2003/35/EC), sets out a framework for the assessment of the effects of certain public and private projects on the environment. Additionally, it sets out a framework for public participation in respect of drawing up certain plans and projects relating to the environment. This is known as the EIA Directive.
2. The EIA Directive is implemented in Great Britain by the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999, as amended ^[4] (TCPA (EIA)99)^[4]. The competent authorities for these Regulations are the relevant local planning authorities.
3. The Directive is implemented in Great Britain for the specific cases of decommissioning nuclear power stations and nuclear reactors by the Nuclear Reactors (Environmental Impact Assessment for Decommissioning) Regulations 1999 (EIADR99)^[5] as amended by the Nuclear Reactors (Environmental Impact Assessment for Decommissioning) (Amendment) Regulations 2006 (EIADR906)^[6], hereafter referred to as EIADR. The enforcing authority for EIADR is ONR. Further information on the EIADR process and the legislative framework can be found in Annex 1.
4. A Pre-Application Opinion (PAO) is an optional step within the EIADR Regulations in which a licensee can seek ONR's opinion as to the content of their application for consent to decommission.
5. An application for consent includes primarily an Environmental Statement (ES), which presents an EIA for the decommissioning project and the mitigation measures to be used to avoid or minimize any significant adverse impacts on the environment. A non-technical summary is provided to support the ES and to provide information in a non-technical format.
6. This document reports on ONR's decision to grant consent for the decommissioning of the CONSORT nuclear reactor located at Imperial College Reactor Centre (ICRC) near Ascot. It describes the main reasons and considerations for the decision, the content of the conditions attached to the Consent and a description of the main measures that the licensee, Imperial College of Science, Technology and Medicine (hereafter Imperial College), must take to control any adverse effects of the project on the environment.
7. The ES submitted by Imperial College covers in detail the overall project to decommission the reactor at ICRC. This includes the removal of all radioactive Low-

Level Waste (LLW) and Intermediate-Level Waste (ILW) from the site, including the reactor tank.

8. All radioactive waste will be removed off-site by road transport. All ILW will be removed from ICRC and taken to Sellafield for storage. All LLW will be taken by road for disposal at the existing LLW repository (LLWR) near Drigg. No radioactive or radioactively contaminated material from the decommissioning project will be permanently stored at ICRC, though there may be a need for some temporary storage pending transfer to LLWR or Sellafield. All non-radioactive hazardous waste (eg asbestos) will be disposed of in a nearby appropriately licensed facility in accordance with the current legislation at the time of removal.

APPLICATION TO CARRY OUT A DECOMMISSIONING PROJECT

The consultation process

Pre-application Opinion

9. Imperial College submitted a scoping report in April 2007 in order to obtain a PAO from ONR (then part of HSE). The report identified a range of issues to be considered in the context of the proposed scope of the environmental statement.
10. After due consideration and taking into account comments received from consultees, ONR identified a number of specific points and issues that should be considered in the ES. These can be found in Annex 6

Public consultation on the environmental statement

11. Imperial College applied to ONR for consent to carry out a decommissioning project at ICRC and provided an ES in January 2015. ONR consulted on the environmental statement, the consultees are listed in Annex 2. In addition, Imperial College publicised the environmental statement in the local newspapers to inform local people. ONR publicised the consultation on the ES on its website, including direct links to the Imperial College ES and non-technical summary (NTS) and additional annexes. Imperial College made copies available for public inspection at the site, along with copies available at 4 public libraries close to the site. ONR also made the documents available at Redgrave Court in Bootle.
12. The public consultation period ended in April 2015. The consultees who responded and were content for their comments to be made publicly available are listed in Annex 3 and copies of these responses were sent to the licensee.
13. These documents will remain available for public inspection at public libraries close to the site, and at Redgrave Court for a period of one year from the date of the Consent

granted by ONR (that is, until July 2016). An electronic copy of the decision report will remain available on the ONR website at <http://www.onr.org.uk/eiadr.htm>.

Request for evidence to verify information within the environmental statement

14. ONR was of the opinion that no further information was necessary before it could make its decision. The ES provided sufficient information and Annex 4 provides an explanation as to why further information was not requested for specific topics.

REASONS FOR GRANTING CONSENT

Decision to grant consent

15. ONR granted consent to carry the decommissioning of the CONSORT reactor in July 2015, and attached conditions to the Consent. A copy of the Consent and conditions is appended as Annex 1.
16. ONR took relevant factors into account when reaching its decision to grant consent. In brief, these were as follows:
 - ONR's view of the adequacy of the information provided in the ES and evidence;
 - ONR's conclusion that environmental benefits would far outweigh detriments;
 - ONR's acceptance of the licensee's determination that the assessed impacts of the project would not be likely to have significant adverse effects on the environment in another European Economic Area (EEA) State; and
 - ONR's recognition that majority of the legislation is enforced by ONR and The Environment Agency (EA), and there are administrative arrangements in place between ONR and EA on working together on matters of mutual interest.

Review of the Environmental Statement

Introduction

17. The decommissioning of the Imperial College at ICRC is a comparatively small project being carried out on a much larger and well-established university campus. The work is confined to the ICRC and will be split in to 4 phases:
 - Phase 1: Removal of in-core removable items;

- Phase 2: Removal of in-core fixed items;
- Phase 3: Reactor tank removal; and
- Phase 4: Demolition

18. The main ICRC site measures 125 m by 45 m and consists of 3 main areas:

- CONSORT reactor centre
- Environmental analysis section building
- Car park

In addition, there is a smaller area 25 m by 25 m containing:

- A small building
- Car park
- 2 concrete floor slabs (relics of demolished buildings)

The overall site is 6250 m² with the 2 areas split by a small area of woodland.

19. The ES submitted to support the application for consent provided all the information required to fully describe and assess the potential environmental impact of the decommissioning project. The content provided all the relevant information indicated in Schedule 1 of EIADR.

Review of the environmental impact of the decommissioning project

20. The ES covers a wide range of environmental aspects and for each provides an assessment of the likely environmental impact. These have been reviewed in detail by ONR, taking into account comments received from respondents of the consultation. These reviews are presented below, together with an overall assessment of the environmental impact of the decommissioning project.

Air quality and climatic factors

ONR Review

21. The potential for the decommissioning work to impact on air quality and climate change were assessed in detail in the ES. Appropriate use of published data by UK-AIR established an appropriate baseline air quality for the site in lieu of previous any

on-site monitoring. All topic areas identified were deemed to have negligible adverse environmental affect.

22. The primary activities identified to have the capacity to impact air quality are during Phase 4 of the Project (demolition). Generation and release of exhaust, potential ozone depleting gases and particulate matter (typically particles between 2.5 and 10 micrometres - $PM_{2.5}$ and PM_{10}) from plant and vehicles is expected to be intermittent throughout the lifetime of the project. The impact of this is expected to be minimal given the amount of work and traffic involved (less than 25 heavy duty vehicles per day), and has been appropriately assessed in a qualitative manner.

23. Regarding climate change, the project will necessarily consume energy but the small scale means that the project cannot measurably influence climate change.

24. The Imperial College ES recommends an Air Quality Management Plan (AQMP) to minimise the impacts from traffic and site activities, highlighting the following mitigation measures:

- Design and implement a transport plan to minimize trips and define access routes;
- No bonfires on reactor site;
- Effective barriers will be erected around dusty activities or the site boundary;
- Machinery and dust-generating activities will be located away from sensitive receptors;
- Plant/vehicles/dust-generating activities should be located away from sensitive receptors as far as practicable;
- All reactor site personnel to be fully educated in minimising dust generation;
- Trained and responsible manager on the reactor site during working hours to maintain logbook and carry out site inspections;
- Consultation with potential receptors before undertaking dusty operations or when regular inspection and maintenance of site vehicles and equipment to minimize exhaust emissions;
- No vehicles will be allowed to idle on site;
- Hard surface the reactor site haul routes and clean them regularly;

- Use nearby rail or waterways for transportation to/from reactor site, where practicable;
- Vehicles leaving site will be washed if necessary;
- All loads entering and leaving site will be covered;
- Speed limits for vehicles to minimise dust entrainment and dispersion;
- Sheeting of vehicles carrying spoil and similar materials to prevent dust being blown from the vehicles whilst driving;
- Run-off of mud and water will be prevented;
- All non-road mobile machinery will use ultra-low sulphur diesel where available.
- Use of screens, dust sheets to prevent dust generation;
- Water will be used as a dust suppressant as appropriate;
- Sweeping of paved and unpaved roads;
- Temporary cover or re-vegetate earthworks if possible;
- Skips will be covered and drop heights minimised;
- Cutting equipment will have water suppression or suitable local exhaust ventilation systems;
- Dust-generating activities will be minimised; and
- Stockpiles will be kept in place for the shortest possible time.

25. Whilst there is the potential to produce PM₁₀ particles during the work (eg during excavation of crane footings and transport off site of materials), the proposed mitigations will serve to further bolster environmental impact margins. Additionally, EIADR does not currently cover health effects, and workers will be protected with appropriate Personal Protective Equipment (PPE), when necessary.

Consultation Comments

26. EA notes that reference to 'agreed limits' in relation to radiation and dust monitoring is unclear as to exactly what they are and how they will be derived.

Conclusion

27. ONR is satisfied that the identified impacts are minor in nature and that although the air quality impact has been predicted to be negligible without the need for mitigation, the ES recommends an AQMP to be implemented to reduce impacts. The AQMP will be agreed with local authority prior to implementation. ONR supports this recommendation along with the proposed mitigation measures, and recommends that the AQMP is used to inform the EMP.
28. Environmental assessment of the proposed process considered that there would be a negligible impact on air quality with no observable effects on local communities and biodiversity adjacent to the site and local transport routes. Nonetheless, mitigation and control measures will be in place and their effectiveness will be reported in the EMP.

Archaeology and cultural heritage

ONR Review

29. The potential for the decommissioning work to impact on archaeology and cultural heritage was assessed in detail in the ES. The project site is within a grade II listed setting including manor house and stables. However, continued developments of ICRC at the site pre and post-World War 2 mean that the removal of the Imperial College will result in no overall change to the character of the setting.
30. There are two registered Parks and Gardens within a 1 km radius of ICRC,
- Grade I Windsor Great Park
 - Grade II Sunningdale Park

Additionally, There are another 30 Grade II listed buildings and nine non-designated heritage assets within the area reviewed.

31. No records reviewed cite or predict any buried archaeological remains that may be compromised during the project at ICRC.
32. The project and associated works has the potential to cause temporary disruption of the manor house and stables (see dust/noise/traffic) but this will have no permanent effect on any of the infrastructure or buildings at ICRC.
33. The project site is within a grade II listed setting however, continued developments of the ICRC at the site pre and post-World War 2 mean that the removal of the Imperial College will result in no overall change to the character of the setting.

Conclusion

34. ONR is satisfied with the proposal for no immediate mitigation measures for archaeology and cultural heritage given the lack of identified impacts on any sites/assets of interest.
35. Overall the significance of effect is neutral to the area with respect to archaeology and cultural heritage.

Ecology

ONR Review

36. The potential for the decommissioning work to impact on Ecology was assessed in detail in the ES. The search area used to establish any impacts was 2 km around the site (5 km for bats) and highlighted a number of potential vulnerable areas.
37. ICRC is located within, and adjacent to areas of broad-leaved woodland, individual scattered trees, grasslands and other vegetation. Windsor Forest and Great Park is cited as the sole statutory designated site as it is both a Site of Special Scientific Interest (SSSI) and in part is designated as a Special Area of Conservation (SAC). In addition, a further eight local wildlife sites (non-statutory) and a proposed wildlife site were also identified:
 - Ash Covert
 - Grassland Near Cheapside
 - Mount Pleasant
 - Platts Firs, Penslade Bottom, Fireball Hill
 - West Edge of Coworth Park
 - The Wells
 - St. Georges Lane Fields
 - Silwood Park (including Cascade Bridge)

Despite close proximity to ICRC there are no direct or indirect impacts regarding ecology anticipated at any the above sites.

38. A search of background data for the area of interest revealed 127 noteworthy species identified including:

- 5 amphibians
- 46 birds
- 10+ mammals (including bats)
- 1 reptile

Though there are 73 records associated with bats in the designated area, none have been associated with ICRC and this is further corroborated by the lack of any evidence of bat occupation being identified. However, the potential for roosting in a nearby tree was identified.

Three badger setts were found within 1 km of ICRC with two lying within 30 m of the reactor building, though both were found to be unoccupied and there were no signs of activity.

Whilst the area around ICRC is not deemed to be typically suitable for a reptile habit there are 7 grass snake records locally, with one located at Silwood Park.

The flowing nature of water bodies near to the site make them unsuitable for any great crested newt habit, meaning it is highly unlikely to discover any at ICRC during the project.

39. A Whilst the impact of works is deemed to be negligible Imperial College has proposed the following mitigation measures are proposed during the project:

- Tree protection measures to be implemented during demolition works
- pre-demolition survey of any disused Badger setts
- The tree with Category 2 bat roosting potential to be clearly marked and retained
- Lighting to be directed away from woodland areas
- vegetation clearance to be undertaken outside of bird nesting season
- watching brief required should works encroach into woodland/grassland edges to ensure reptile protection

Consultation Comments

40. Natural England (NE) noted the special ecological nature of the area surrounding ICRC. However, the project would not have a significant effect on ecology provided

that the proposal is carried out in strict accordance with the advice discussed within the submitted ES

41. NE notes the application may provide opportunities to incorporate features into the design of the final site state which are beneficial to wildlife, such as the incorporation of roosting opportunities for bats or the installation of bird nest boxes. This is in accordance with Paragraph 118 of the National Planning Policy Framework. And it is recommended that that Imperial College should apply the published NE standing guidance on protecting species.

Conclusion

42. ONR is satisfied with the identified impacts and mitigation measures for ecology. The success of these measures along with any new measures implemented should be presented in the annual EMP.
43. The results of additional surveys conducted during the project should be reported in the EMP, highlighting any movement from the presented baseline.
44. Despite the Reactor Centre's proximity to a number of potentially sensitive areas, the localised nature of the project is such that save for the potential need for some minor trimming of trees there will be negligible effects on the local ecology.

Geology, hydrogeology and soils

ONR Review

45. The potential for the decommissioning work to impact on geology, hydrogeology and soils was assessed in detail in the ES. The geological and geomorphological diversity of ICRC area includes variable deposits of clay and gravelly sand, considered representative of the Bagshot Formation. The surrounding ground level gently slopes towards the northwest, with the Reactor Centre built on a level platform cut into the slope.
46. There is a shallow aquifer on the site, though migration of water vertically to groundwater is prevented by a layer of London Clay and the EA has classed the Bagshot Formation as a Secondary Aquifer. Investigation showed no groundwater within 6 m depth around the reactor site, though there are eight licensed groundwater abstraction sites with 1 km radius of the site but none of these are used for potable water.
47. The following effects upon the aquifer could potentially arise as a consequence of decommissioning and demolition activities:

- leaching of any contaminants from the made ground;
 - pollution of groundwater from fuel, oil and chemical spills; and
 - leaching of potentially mobile contaminants associated with imported materials such as crushed concrete/demolition materials used for construction compounds or access roads
48. In addition to those effects listed above which are deemed moderate negative; there is the potential for further impact to arise through dust and other possible asbestos containing materials during the demolition of structures and movement of construction vehicles. While the sensitivity is deemed to be high importance, the magnitude of any effects associated with the release of airborne contaminants is considered to be slight adverse. Overall the significance is deemed to be moderate negative.
49. The nature of the made ground beneath site means there is a potential for contamination directly below the Reactor Centre which will be investigated in full in conjunction with local environmental health officials using intrusive investigation works to assess the extent of any contamination and baseline conditions. The outcome of this investigation will result in the production of a detailed Remediation Method Statement (RMS), alongside the findings of any radioactive contamination at the site, which will specify the mitigation measures necessary to break any identified pollutant linkages. This RMS will be submitted to the local environmental health officer (and the EA if necessary) prior to any demolition works beginning.
50. A Construction Environmental Management Plan (CEMP) will also be prepared. This will set out procedures for contractors to follow for importing and exporting materials to and from site and include chemical criteria for imported soils and aggregates. It will explain methods for controlling water run-off, dust suppression and measures to implement during removal of contaminated materials off-site for licensed treatment or disposal sites.

Consultation Comments

51. EA notes that while a CEMP will be produced, it is recommend that reference should be made to the relevant Environment Agency Pollution Prevention Guidance notes (PPGs) during preparation of the document.
52. EA notes that the ES is primarily focussed on 4th phase of the project (demolition) and any contamination that may arise from this phase. Specific comments or references to existing contamination are lacking other than in section the Non-Technical Summary, which alludes to contaminants in the made ground.

Conclusion

53. ONR is satisfied with the identified impacts and mitigation measures for geology, hydrogeology and soil. There is predicted indirect effect on geology, hydrology and soils and surface water during the end state due to the potential increase in surface permeability at the reactor site when the area is reverted to amenity grassland. However, overall any negative effects are deemed to be slight, with little move away from the baseline.
54. Potentially contaminating materials (e.g. fuels/oils/lubricants) will be identified, properly stored (securely bunded area) and disposed of appropriately to avoid land contamination.
55. Wherever possible additional water will not be used unless necessary and together with the normal management procedures of containment, will prevent the establishment of any link between source and receptor.
56. Prior to demolition works commencing, investigations in accordance with local environmental health officers agreed scope will be conducted to establish baseline conditions. These will include assessment of any historic contamination below the Reactor Centre. Leaching assessments to establish if further mitigation is needed will also be conducted and all the information will be used to create a remediation method statement. ONR notes that this is an area of concern for EA but feels that the phased approach of the project and commitment to conduct these investigations prior to beginning demolition works means that there will be satisfactory opportunity to evaluate this aspect fully.
57. A CEMP will be produced before any demolition works begin. This will include detailed procedures for contractors regarding mitigation measures to be employed during demolition. This should also include reference to the relevant PPGs. The CEMP should in addition be referenced in the EMP.

Landscape and visual

ONR Review

58. The potential for the decommissioning work to impact upon landscape and visual effects was assessed in the ES.
59. The Imperial College itself is not within a designated area of landscape value. However, it is adjacent to a local area of special landscape importance – Windsor Great Park. The ancient woodland of the park means that it is considered a SSSI and a Special Area of Conservation (SAC). The Imperial College is within the grounds of ICRC and is not visible from outside the site due to the local topography and

extensive tree cover. Internal vegetation and other buildings around the campus mean that views of the Imperial College are filtered. Therefore, the project is not expected to have any adverse on the landscape or visual impact.

Conclusion

60. ONR is satisfied with the assessment made for landscape and visual and that decommissioning will not have any adverse effect on the established campus landscape. The return of the Imperial College area to a green amenity area following the completion of the work can be considered a minor positive visually.

Noise and vibration

ONR Review

61. The potential for the decommissioning work to have impacts on the environment from noise and vibration was assessed in detail in the ES. Health and Safety at Work legislation requires that if noise poses a risk to workers health, mitigation measures be put in place. Likewise, the public and residents must be protected not only from any physical damage to health, but also from nuisance or deterioration in quality of life.

62. Eight main areas of sensitivity to noise and vibration were identified at ICRC:

- William Penny Hall
- Gymnasium
- Refectory
- Hamilton Library
- Brian Flowers Hall
- Maintenance Department Workshop
- Virginia Water Lodge
- Residence to the east of B383, Buckhurst Road

63. The first three phases of the decommissioning are all contained inside the Reactor Centre and are all concerned with the actual CONSORT reactor itself. Additionally, soft demolition of areas within the buildings will be shielded by the outer shells of the structures and are not considered to be a source for significant external noise or

vibration. During this time it is envisaged that there will be limited quantity heavy goods vehicles (HGV) movement – circa 1 per day.

64. During demolition it is expected that there will likely be one movement per hour within 5 m of the nearest noise sensitive area, and that given the likely maximum predicted speed (30 mph) the noise is likely to be around 51 dB, which is considered not significant.
65. With the exception of some potential specialist contractor work all demolition works are due to take place during normal site hours so as to minimise student and resident disruptions

Conclusion

66. ONR is satisfied with the identified impacts and that there are no significant impacts identified from the noise and vibration. However, the demolition work is taking place within a student campus and as far as possible works will be timed to minimise disruption during exams for example from noise. Given the location of the works and the possibilities for highly sensitive areas during exams, temporary cessation of work or noise reduction measures should be considered within the CEMP for the demolition works to minimise noise as far as practicably possible.

Socio - economic

ONR Review

67. The potential for the decommissioning work to impact upon socio-economic factors was assessed in the ES.
68. The Imperial College currently employs 20 staff for whom the closure of the facility and the planned decommissioning will mean expected job changes for these staff. This may also mean a minor impact on the local population as these staff may move out of the area. These can be viewed locally as minor negative impacts.
69. There is likely to be a small increase in employment during the works on a temporary basis, whilst jobs are created to conduct the decommissioning of the Imperial College. This can be considered a minor positive and will create around 20 new temporary jobs at any given time.
70. The loss of ICRC will have zero effect on the student population; the loss of the facility could be deemed a minor negative with regards to educational resources and tourism.

Conclusion

71. ONR is satisfied with the identified impacts and the proposal that no mitigation measures for socio-economic factors are required. Overall, the project may create around 20 temporary jobs for the area whilst the decommissioning is underway, but will ultimately result in the loss of all jobs at the ICRC. The scope for mitigating this is limited; some current staff will take retirement and others will be offered opportunities for redeployment or redundancy

Surface water quality, drainage & discharges

ONR Review

72. The potential for the decommissioning work to impact on surface water quality and drainage was assessed in detail in the ES. The project has the potential to affect surface and groundwater quality, through discharges of radiological and/or non-radiological contaminated liquids or by leaching of materials. In addition, any contamination of groundwater could affect the land along with any surface waters to which it is discharged. Potential Pathways for contamination are:

- flow through drainage systems
- groundwater flow
- mobilisation by surface water

with the main potential receptor being the river Bourne.

73. The end-state of the decommissioning project seeks to remove all foundations, buried services, and drainage serving the Reactor Centre. Potential localised adverse environmental risks via the above pathways are likely occur from

- polluted surface water run-off
- increase in drainage load
- spillages and leaks

Activities most likely to lead to these outcomes during decommissioning are heavy goods vehicles (HGV) movements, operation of excavators (to remove any buried services) and demolition of buildings.

74. The majority of radioactive aqueous waste from the project is contained within the reactor cooling water (5.5 m³), which contains very small amounts of tritium. Small

volumes of cooling water were routinely discharged under permit from the EA prior to the closing of the Reactor Centre. Application of best practicable means (BPM) during the decommissioning project will seek to minimise discharges.

75. The cooling water will be drained into the holding tank prior to commencing any decommissioning works and any use of water in cutting and decontamination activities will be minimised, further preventing additional generation of aqueous waste for disposal.
76. No liquid non-radioactive wastes are expected to be discharged to water during decommissioning as any laboratory chemicals are classed as hazardous waste and disposed of via licensed channels
77. All radioactive waste will be removed off-site by road transport. All ILW will be removed from ICRC and taken to Sellafield for storage. All LLW will be taken by road for disposal at the existing LLW repository (LLWR) near Drigg. No radioactive or radioactively contaminated material from the decommissioning project will be permanently stored at ICRC, though there may be a need for some temporary storage pending transfer to LLWR or Sellafield.
78. Prior to demolition works commencing an asbestos demolition survey will be undertaken to confirm the presence or absence of asbestos within any of the existing structures. All non-radioactive hazardous waste (eg asbestos) will be disposed of in a nearby appropriately licensed facility in accordance with the current legislation at the time of removal.

Consultation Comments

79. EA notes that there are separate permits in place that authorise the disposal of radioactive waste from both the nuclear and non-nuclear sites (Reactor Centre and Environmental Analysis Section). ONR will in future assess an application from Imperial College to delicense the nuclear licensed site area and both of the environmental permits will be required to be surrendered by the EA prior to delicensing.
80. EA notes that decisions regarding wastes that are generated from outside areas covered by the extant environmental permits should be underpinned by the application of the waste hierarchy.
81. EA notes that it is unclear how reactor cooling water is proposed to be dealt with. The option to discharge the entire reactor cooling water volume to the holding tank and then to discharge this liquid over several years, would be advantageous, subject to environmental permits being met.

82. EA notes that the use of 1994-2002 data for tritium discharges is without a clear explanation for selection.
83. EA notes that reference to specific legislative requirements for the transfer and re-use/recovery/disposal of non-hazardous and hazardous (Directive) wastes is generally lacking in the Environmental Statement.
84. EA supports the proposal by Imperial College to recycle any waste where it is not possible to re-use. However, it notes that such re-use (either at site or other sites) will be subject to EPR10 and other legislation, unless demonstrated that it is not in fact waste.
85. NE notes that given the potential pathway present between the site and the SAC and SSSI designated sites through groundwater and, by extension, surface water linkages, all construction works must follow best practice guidance and pollution prevention controls.
86. Nuclear Legacy Advisory Forum notes that given the proposal to send LLW and ILW to Sellafield and LLWR, there is need for proper engagement and consultation with the local authorities in Cumbria that will receive the waste arising from this operation.

Conclusion

87. ONR is satisfied with the identified impacts and mitigation measures for surface water quality, drainage and discharges taking into account the information provided by Imperial College. Whilst not explicit within the ES, the intention of Imperial College is to transfer reactor cooling water to a holding tank and discharge under the existing EA permit. Any proposed changes to this approach that may affect the environmental baseline would need approval from ONR and also the EA if a new permit is required.
88. ONR will have continued oversight of changes to any environmental baselines and amendments to plans or practices with environmental impacts via regular licensee engagement and EMPs along with enforcement of Regulation 13 processes of EIADR where appropriate.
89. EA are responsible for regulating non-radioactive contamination at Imperial College and will regulate disposals of radioactive waste by including conditions and limitations on disposal in an authorisation granted under EPR10.

Traffic and transport

ONR Review

90. The potential for the decommissioning project work to impact on traffic and transport was assessed in detail in the ES. The assessment considered the impact of traffic associated with the decommissioning project at ICRC on the operation of the highways, road safety and the local environment. This includes the experience and any difficulties encountered by other road users and pedestrians (excluding the noise/vibration and emission effects of traffic, which were considered separately under the topics of noise and vibration and air quality respectively).
91. The decommissioning project will result in additional traffic movements to and from ICRC however, this needs qualification. Plant, materials and equipment will all be required for the decommissioning project including; an excavator, grader, dump trucks tractors, trailers and a large capacity crane. Over the entire decommissioning project, the maximum number of HGVs entering and/or exiting the Reactor Centre site per day is not predicted to exceed 10 – maximum during final demolition.
92. There is the potential for increased accidents during abnormal and controlled loads on site, however the overall significance of temporary and phased increased HGV traffic is deemed negligible.

Consultation Comments

93. Highways England noted that as it is responsible for operating, maintaining and improving England's strategic road network (SRN) on behalf of the Secretary of State for Transport, it would only have concerns where impact upon the M3 was identified.

Conclusion

94. ONR is satisfied with the identified impacts and mitigation measures for traffic and transport. ONR recommends Imperial College continue to liaise with Highways Agency to assess and mitigate any adverse impacts on the local population. Whilst it is clear that the decommissioning project will generate a small increase in traffic to ICRC during busy periods of the project, the environmental impact of this is expected to be negligible.

Cumulative Impacts

ONR Review

95. It is important that an EIA takes full account of any surrounding developments that could create cumulative environmental impacts, or which could impact upon the

- effectiveness of mitigation put in place to protect the environment. A search conducted using the Royal Borough of Windsor and Maidenhead (RBWM) P
96. Planning application search facility revealed seven planning applications within 1 km of the reactor site.
97. Six applications are for developments associated with individual residential units and the seventh is for the construction of 23 residential units, access road and landscaping following the demolition of the six existing dwellings. This development site is located 0.95 km from the reactor site.
98. None of these projects require an EIA and as such are all considered to be minor, with limited potential to interact with the Imperial College project. No immediate mitigation measures are deemed necessary given this assessment.
99. It should also be noted that any future major developments in the area will be subject to EIA regulations under the Town and Country Planning (England and Wales) Act 1999 (TCPA99)^[4], and any EIA's that arise from this will have to take into account the decommissioning project at ICRC as part of a cumulative impact assessment.

Conclusion

100. ONR is satisfied with the assessment for cumulative impacts. ONR recommend that Imperial College continue to address the cumulative impacts associated with other major significant infrastructure. It is further recommended that the cumulative impact assessment be conducted annually as projects progress. These assessments should be reported as appropriate in the annual EMPs. ONR will monitor the potential cumulative effects between ICRC and any significant developments and attend meetings, such as the Imperial College Liaison Committee, where appropriate.

Effects on other European Economic States

ONR Review

101. The environmental effects of the decommissioning project are generally local in nature and limited to the vicinity of the site; for instance impacts related to local contamination, noise and impact on local flora and fauna. In general, there are very few ways in which a decommissioning project could realistically cause an environmental impact at a substantial distance from the decommissioning site. These ways might include discharges of pollutants or radioactive material into the local sea or waterways or to air, or through transfer of contamination to other sites via the migration of birds or other animals.

102. All of the environmental impacts identified in the ES are restricted to the environment around the ICRC site. Any discharges to water and air during decommissioning will be controlled according to appropriate authorisations granted by EA under The Environmental Permitting Regulations (EPR10) and other relevant legislation. Similarly, the decommissioning project will not generate significant amounts of greenhouse gases, for instance through transport or use of machinery, and thus will have no or negligible impact on climate change. Overall, no concerns for significant environmental impact from the decommissioning project in other EEA States were highlighted. ONR presented this opinion to the Secretary of State in February 2015.

Conclusion

103. ONR is satisfied that the decommissioning project at ICRC is unlikely to have a significant environmental effect on other EEA States.

Overall Conclusion

104. In ONR's view, the environmental statement and other associated evidence provided a comprehensive EIA for the decommissioning project. The ES showed that the predicted environmental benefits overall far outweighed any adverse environmental effects of the project.

105. The impact of any new developments around ICRC will need to be assessed as details become available. The mechanism of the EMP will be used to ensure that future surveys, mitigation requirements and revisions (as required by new developments), are reported to the ONR and stakeholders.

106. Continued engagement with regulators and stakeholders is an important part of the decommissioning project at ICRC. As the details of any surrounding developments become available, Imperial College will assess any likely cumulative impacts and, in combination with regulators and stakeholders, will agree and implement appropriately any required additional mitigation measures to protect the environmental and socio-economic assets of the ICRC area. It is recommended that Imperial College address the cumulative impacts associated with other major significant infrastructure projects and utilise additional mechanisms for assessment alongside the annual EMP.

107. However, it should be noted that if a proposed change to the decommissioning project may result in a significant adverse effect on the environment, then Imperial College must apply to ONR for a determination as to whether the change should be subjected to an EIA (under regulation 13 of EIADR).

Such changes can include delays or accelerations of the decommissioning plan, or changes in the methods to be used for example.

108. Imperial College must prepare an annual EMP that identifies mitigation measures, reports on their implementation, effectiveness, progress of the decommissioning work and reports on changes to such measures in light of experience. This is considered to provide an important way for ONR to maintain close awareness of the progress of the decommissioning project. A copy of the EMP and its subsequent revisions must be sent by the licensee to ONR and be made available to the public.

109. The ONR EIADR team will maintain regulatory oversight of the Imperial College decommissioning project. In addition to the EMP and other conditions of the consent described above, the EIADR team will also conduct periodic audits of the decommissioning work to assess progress and management of the environmental impact.

110. After reviewing the information and evidence provided as part of the Imperial College application for consent, consent to decommission was granted in July 2015 with relevant conditions attached. The conditions of consent can be found in the decision report.

Environmental benefits, detriments, and consideration of measures to control adverse environmental effects (mitigation measures)

111. In ONR's opinion, the ES (including evidence) showed overall, the predicted outcome (levelled, landscaped site) far outweighed any adverse environmental effects of the project. The environmental statement summarised all the environmental impacts of the decommissioning project in all key areas, describing their magnitude in terms of Significant Positive, Minor Positive, Negligible, Minor Negative and Significant Negative impacts. The proposed three phase decommissioning process will likely pose minimal risk to the environment

112. Traffic/transport and noise/vibration were the key areas where any negative impact was identified. These were deemed minor negatives as it will likely be negligible when considering the intermittent nature of plant traffic and works generated.

113. Another Minor Positive was identified under the visual impact, as the site is will be returned to a landscaped green area within the campus.

Issues covered elsewhere

Town and country planning

114. Where there are new structures to be built or substantial alterations to buildings, these developments will require planning consent. This will be obtained from the local planning authority, i.e. projects that will require planning consent at ICRC will be regulated under the Town and Country Planning (England and Wales) Act 1999 (TCPA99)^[4] and enforced by the relevant local planning authorities. ONR will be consulted on any associated applications for planning permissions by the relevant local planning authorities. In such cases where environmental impact assessment is required the public will also be consulted before any decision is made.

115. It follows, therefore, that Imperial College can begin work on all parts of the decommissioning project so long as the work does not require additional permissions under town and country planning legislation.

116. ONR and the local planning authorities have had and will continue to have discussions on the interface between EIADR, NIA65, TCPA99 and other town and country planning legislation, as necessary.

Health, safety and environment legislation

117. The environmental statement described links to related health, safety and environment legislation. This included legislation covering: occupational health and safety; nuclear safety; radioactive contamination and discharges; and treatment of non-radioactive contamination and wastes (involving materials such as asbestos).

118. ONR is satisfied that control of such health, safety and environment matters is achieved and will continue to be achieved through regulation and enforcement of existing legislation by the relevant regulatory authorities. Compliance with relevant legislation should ensure that adverse environmental impacts would be minimal. The majority of the legislation is enforced by ONR and The EA, and there are administrative arrangements in place between ONR and EA on working together on matters of mutual interest.

119. It follows, therefore, that Imperial College can begin work on all parts of the decommissioning project so long as the work does not require additional permissions under related health, safety and environment legislation.

120. ONR and EA have had and will continue to have discussions on the interface between EIADR, NIA65, RSA93 and other health, safety and environment legislation, as necessary.

CONDITIONS ATTACHED TO THE CONSENT

Content of the conditions

121. ONR has attached conditions to the Consent. A copy of the Consent and conditions is appended at Annex 1. In brief, Imperial College must prepare and implement an environmental management plan that identifies mitigation measures, describes their implementation and effectiveness, and any changes in light of experience. A copy of the environmental management plan and its subsequent revisions must be sent to ONR and made available to the public. ONR must also be notified in advance of any significant changes to mitigation measures to prevent, reduce or where possible offset any major adverse effects on the environment.
122. Regulation 16 of EIADR provides ONR with sufficient powers under HSWA74 to effectively enforce these conditions.
123. The licensee will make a copy of the environmental management plan available for public inspection at public venues close to the site.

Condition 1

124. The project shall commence before the expiration of five years from the date of this Consent.

Condition 2

125. The licensee is required to prepare and implement an environmental management plan to cover mitigation measures to prevent, reduce, or where possible, offset any significant adverse effects on the environment.
126. The project shall not be carried out except in accordance with the environmental management plan.

Condition 3

127. Within 90 days of the date of this Consent, with reference to the environmental statement provided under regulation 5(1) the environmental management plan shall:
- a. list the mitigation measures that are already identified in the environmental statement;

- b. list the options to implement work activities where mitigation measures may be required but where selection of an option will only be possible in the future; and
- c. list the work activities where mitigation measures may be required but where assessments to identify mitigation measures will only be possible in the future.

Condition 4

128. Subsequent to condition 3, the environmental management plan shall:
- a. with reference to condition 3b, identify the mitigation measures for options that have been selected, giving reasons for their selection;
 - b. with reference to condition 3c, identify the mitigation measures from assessments carried out, giving reasons for their selection;
 - c. describe the effectiveness of the mitigation measures taken over time; and
 - d. describe significant changes to the mitigation measures in light of experience, giving reasons for such changes.

Condition 5

129. The licensee is required to:
- a. provide the environmental management plan to ONR within 90 days of the date of this Consent and on each anniversary of the of the expiry of this 90 day period or within such longer time as ONR may agree, the licensee shall provide an updated environmental management plan;
 - b. make the environmental management plan available to the public within 30 days of the plan being sent to ONR, or within such longer time as the ONR may agree; the plan may replace earlier versions.

Condition 6

130. The licensee is required to provide notice to ONR of any significant change to a mitigation measure to prevent, reduce, or where possible, offset any major adverse effects on the environment no less than 30 days before the change is made, or within such shorter time as ONR may agree.

Reasons for the conditions

131. In order to successfully control environmental impacts, mitigation measures will be necessary in a number of areas. This is why ONR attached conditions to the Consent that cover mitigation measures.
132. Some future work activities can only be assessed for the need for mitigation measures to control environmental impacts during the later stages of the decommissioning project, such as impacts on wildlife during construction of temporary buildings. In such cases, mitigation measures to protect wildlife would be dependent on the wildlife present at that future time. Condition 3c requires these work activities to be listed in the environmental management plan. Although the need for mitigation measures for such work activities cannot yet be assessed, it seems likely that measures would be similar to those for similar work activities during the earlier stages of the project.
133. As the project progresses, condition 4 requires the environmental management plan to be updated. Where options for implementation of work activities have been selected from the list of work activities and options compiled under condition 3b, condition 4a requires these selected options and associated mitigation measures to be included in the plan, along with reasons for their selection.
134. Where the need for mitigation measures to control environmental impacts during the later stages of the decommissioning project have been assessed from the list of work activities compiled under condition 3c, condition 4b requires these mitigation measures to be included in the environmental management plan, along with reasons for their selection.
135. Condition 4c requires the environmental management plan to describe the effectiveness of mitigation measures over time. Condition 4d requires the plan to describe significant changes to mitigation measures in light of experience, along with reasons for those changes. The plan will be, therefore, a living document that will be periodically reviewed and revised throughout the whole of the decommissioning project.
136. Condition 5 requires Imperial College to send the environmental management plan and its subsequent revisions to ONR periodically. The timeframe for sending the plan to ONR is on an annual basis, or such longer period of time as ONR may agree. In the first part of the works phase it is likely that this timetable will be followed, but as experience is gained and effectiveness of mitigation measures demonstrated, the period of time between subsequent documents may well increase. During the care and maintenance period, this period of time is likely to be much longer, perhaps every

five to ten years. Timeframes for the site clearance phase are likely to be similar to those for the works phase.

137. Condition 5 also requires Imperial College to make copies of the environmental management plan available to the public. This is to keep the local population informed on progress with mitigation measures.

138. Condition 6 requires Imperial College to give ONR advance warning of any significant changes to mitigation measures to control major adverse effects on the environment. Significant changes to mitigation measures might become necessary to control major adverse environmental effects in the future.

Annex 1

Decommissioning Project Consent

July 2015

**NUCLEAR REACTORS (ENVIRONMENTAL IMPACT ASSESSMENT FOR
DECOMMISSIONING) REGULATIONS 1999 (THE REGULATIONS)**

CONSENT

Granted under regulation 4(b) in accordance with regulation 8(3) with conditions attached
under regulation 8(4)

IMPERIAL COLLEGE OF SCIENCE, TECHNOLOGY AND MEDICINE – Licence Number 7b The Office for Nuclear Regulation, pursuant to an application under the Regulations for consent to carry out the project* under regulation 4(a) and in accordance with the requirements of regulation 8(3) and subject to conditions attached under regulation 8(4) grants consent for the project under regulation 4(b), as follows:

- i. to retrieve, package and remove all radioactive and non-radioactive waste from the Imperial College Reactor Centre located at Silwood Park Campus;
- ii. to initiate the demolition phase of the project, only when a full investigation of the ground beneath the Imperial College has been conducted and any required mitigation measures identified and appropriately implemented; and
- iii. achieve the expected end-state that allows Imperial College Reactor Centre to be delicensed.

Dated: July 2015

Signed

**For and on behalf of the
Office for Nuclear Regulation**


**A person authorised to act
in that behalf**

* Project as defined in regulation 2

Conditions attached to Decommissioning Project Consent

July 2015

**NUCLEAR REACTORS (ENVIRONMENTAL IMPACT ASSESSMENT FOR
DECOMMISSIONING) REGULATIONS 1999 (THE REGULATIONS)**

CONDITIONS

Attached under regulation 8(4) to Decommissioning Project Consent No. 1 granted under regulation 4(b)

**IMPERIAL COLLEGE OF SCIENCE, TECHNOLOGY AND MEDICINE – License Number
7b**

Condition 1

The project* shall commence before the expiration of five years from the date of this Consent.

Condition 2

- a. The licensee is required to prepare and implement an environmental management plan to cover mitigation measures to prevent, reduce, and where possible, offset any significant adverse effects on the environment.
- b. The project shall not be carried out except in accordance with the environmental management plan.

Condition 3

Within 90 days of the date of this Consent, with reference to the environmental statement provided under regulation 5(1) the environmental management plan shall:

- a. list the mitigation measures that are already identified in the environmental statement;
- b. list the options to implement work activities where mitigation measures may be required but where selection of an option will only be possible in the future; and
- c. list the work activities where mitigation measures may be required but where assessments to identify mitigation measures will only be possible in the future.

* Project as defined in regulation 2

Condition 4

Subsequent to condition 3, the environmental management plan shall:

- a. with reference to condition 3b, identify the mitigation measures for options that have been selected, giving reasons for their selection;
- b. with reference to condition 3c, identify the mitigation measures from assessments carried out, giving reasons for their selection;
- c. describe the effectiveness of the mitigation measures taken over time; and
- d. describe significant changes to the mitigation measures in light of experience, giving reasons for such changes.

Condition 5

The licensee is required to:

- a. provide the environmental management plan to the Office for Nuclear Regulation within 90 days of the date of this Consent and on each anniversary of the of the expiry of this 90 day period or within such longer time as the Office for Nuclear Regulation may agree, the licensee shall provide an updated environmental management plan;
- b. make the environmental management plan available to the public within 30 days of the plan being sent to the Office for Nuclear Regulation, or within such longer time as the Office for Nuclear Regulation may agree; the plan may replace earlier versions.

Condition 6

The licensee is required to provide notice to the Office for Nuclear Regulation of any significant change to a mitigation measure to prevent, reduce, and where possible, offset any major adverse effects on the environment no less than 30 days before the change is made, or within such shorter time as the Office for Nuclear Regulation may agree.

Dated: July 2015

Signed

**For and on behalf of the
Office for Nuclear Regulation**

[REDACTED]

**A person authorised to act
in that behalf**

Annex 2

Consultation on the environmental statement

Following extensive consultation exercises prior to the submission of the EIA, ONR was keen to maintain the continuity of involving all parties who had shown an interest in the project. To do this ONR contacted those parties previously involved during initial discussions surrounding the project.

Documents were made readily available at 3 local libraries to ICRC, along with knowledge centre - ONR Bootle Offices and online.

Organisations and individuals involved in the consultation process

ONR's consideration included holding discussions with ONR's site inspector for Imperial College stakeholders with expertise in environmental matters as well as taking into account written comments received during consultations. The results of these consultations were used to inform both the final ES and conclusions by ONR.

ONR directly contacted statutory and non-statutory consultees. The consultation was notified directly to 25 individuals in 24 organisations.

Statutory Consultation Bodies

ONR consulted 4 individuals in 3 organisations:

- Natural England (NA)
- Environment Agency (EA)
- Royal Borough of Windsor & Maidenhead Council

Non-Statutory Consultation Bodies

ONR consulted 21 organisations:

- Berkshire East PCT
- Berkshire Wildlife Trust
- British Trust for Ornithology
- Campaign to Protect Rural England
- Country Land and Business Association

- Crown Estates
- DEFRA
- English Heritage
- Food Standards Agency
- Public Health England
- National Farmers Union
- National Trust
- Nuclear Legacy Advisory Forum
- Railtrack Properties
- Ramblers Association
- RSPB
- Royal Berkshire Fire & Rescue Service
- Silwood Park Campus Committee
- Sunninghill Parish Council
- Sunninghill and Ascot Parish Council
- Thames Valley Police

Annex 3

Consultees who responded on the environmental statement

- Environment Agency
- Natural England
- Food Standards Agency
- Highways England
- Nuclear Legacy Advisory Forum

Annex 4

Topics not pursued for evidence or further information – topics raised by consultees

Consultees made comment regarding the mention of as low as reasonably practicable (ALARP) through the application of best practicable means (BPM) in the ES. It was felt that it is more appropriate and accurate to use as low as reasonably achievable (ALARA) and best available techniques (BAT). ONR notes the request but felt that the language used within the ES did not require amending as it is consistent with the requirements of both BAT and ALARA.

Annex 5

Background legislative framework for nuclear safety

Energy Act 2013

Part 3 of The Energy Act 2013 deals with Nuclear Regulation. It establishes ONR as a statutory corporation. Amongst other things, it makes the ONR responsible for the enforcement of statutory provisions which are 'relevant statutory provisions' for the purposes of that Act. These provisions include sections 1; 3-6; 22 and 24A of NIA65 as well as the Nuclear Industries Security Regulations 2003 (NISR) and the Carriage of Dangerous Goods (CDG) 2009 as they apply to the carriage of radioactive material for civil purposes. It refers throughout to the 'appropriate national authority' which in England, Wales and Scotland is the ONR. In relation to Northern Ireland, it is the Secretary of State.

Health and Safety at Work Act (HASWA)

The Health and Safety at Work etc. Act 1974 (HSWA74)^[9] is primarily a statute for securing, among other things, the health and safety of persons at work and protecting others against the risks to their health and safety in connection with the activities of persons at work. HSWA74 places duties on employers and employees, establishes the Health and Safety Commission and HSE, and provides for health and safety regulations. HSWA74 also provides for the appointment of inspectors and defines the powers available to them. There are also provisions relating to the disclosure of information and to offences. In relation to nuclear installations, it incorporates the licensing parts of the Nuclear Installations Act 1965 (NIA65)^[10] as relevant statutory provisions.

Nuclear Installations Act 1965

NIA65 is the main piece of legislation used to regulate the safety of nuclear installations. It was amended in 1974 when HSE was created to allow for, among other things, the substitution of HSE as the licensing authority. Under NIA65, no site may be used for the purpose of installing or operating any nuclear reactor or prescribed nuclear installation unless a nuclear site licence has been granted to a corporate body by HSE and is for the time being in force.

Under NIA65, ONR may at any time attach to a licence such conditions as appear necessary or desirable in the interests of safety, or with respect to the handling, treatment and disposal of nuclear matter. These conditions give ONR powers to directly regulate the licensees' activities using licence instruments. In addition, the goal-setting nature of the licence conditions requires each licensee to develop

compliance arrangements which best suit its business needs, provided they demonstrate that safety is being managed adequately.

Other legislation dealing with nuclear and radiological hazards

A range of other legislation dealing with nuclear and radiological hazards applies to nuclear licensed sites in addition to NIA65. Radiological protection under routine and emergency situations is regulated under the Ionising Radiations Regulations 1999 (IRR99)^[11] and Radiation (Emergency Preparedness and Public Information) Regulations 2001 (REPPIR)^[12], respectively, and enforced by ONR. Radioactive disposals, including discharges, are regulated under the Radioactive Substances Act 1993 (RSA93)^[13] and enforced by the Environment Agency in England, Natural Resources Wales in Wales (NRW), and Scottish Environment Protection Agency (SEPA) in Scotland.

Effects of decommissioning on other countries

Decommissioning is one of the activities for which the European Commission requires a submission by governments of Member States under Article 37 of the Euratom Treaty. The submission identifies the potential impacts on Member State countries of the decommissioning strategy of a particular nuclear installation.

EIADR contains arrangements for consultation with other States party to the Agreement on the European Economic Area (EEA) if a decommissioning project is likely to have significant environmental effects on those States; EIADR do not require a submission to the European Commission.

Regulators and others working together

Regulators and others work together on matters of mutual interest, and in particular, there are administrative arrangements between ONR and the Environment Agency, SEPA and the Food Standards Agency (FSA). When considering discharge authorisations, for example, the Environment Agency and SEPA consult ONR and FSA, and FSA monitors terrestrial and aquatic food.

Regulators and others also work together in other areas. The lead on the submission under Article 37 of the Euratom Treaty, for example, is with the Department for Environment, Food and Rural Affairs (DEFRA) for nuclear installations in England and Wales, and with the Scottish Executive for nuclear installations in Scotland. The Article 37 submission is prepared by the Environment Agency or SEPA, as appropriate, in consultation with ONR and FSA. The Nuclear Decommissioning Authority (NDA) has the responsibility for liabilities arising from past and future

government civil nuclear programmes and ONR liaises with NDA on issues of mutual interest regarding the decommissioning of reactors.

Legislative process under EIADR

Application for consent to carry out a decommissioning project

The intention of the EIA Directive and EIADR is to involve the public through consultation in considering the potential environmental impacts of a decommissioning project, and to make the decision-making process on granting consent open and transparent.

EIADR99 came into force in November 1999. Since then, any licensee wishing to begin to decommission a nuclear power station or other nuclear reactor (as defined) must apply for consent to carry out a decommissioning project under EIADR, undertake an environmental impact assessment and prepare an environmental statement that summarises the environmental effects of the project.

When planning to undertake an environmental impact assessment and preparation of an environmental statement, there is an optional stage where the licensee may request from ONR an opinion on what the environmental statement should contain (called a pre-application opinion). In such a case, the licensee must provide information (such as in the format of a scoping report) on which ONR will base its opinion.

When preparing its opinion, ONR must consult and take into account the views of the consultation bodies identified in EIADR, which are the local planning authority, local highway authority, any principal council for the area (if it is not the local planning authority), and the relevant environment agency. A range of environmental organisations and agencies, namely:

- Natural England (NE)
- Environment Agency (EA)
- Royal Borough of Windsor & Maidenhead Council

ONR may also consult and take into account the views of other organisations and members of the public.

The environmental statement must provide the information in Schedule 1 to EIADR that is reasonably required and which the licensee can reasonably compile. Briefly, the environmental statement should contain a description of the following:

- the project (including aspects such as physical characteristics and expected emissions)

- main alternatives (options) studied by the licensee
- aspects of the environment likely to be significantly affected (such as water and air)
- likely effects on the environment (such as short-, medium-and long-term effects and cumulative effects)
- any mitigation measures envisaged to prevent, reduce and where possible offset any significant adverse environmental effects

The environmental statement must also contain a non-technical summary of the information provided.

Public consultation on an environmental statement

Once the licensee has undertaken an environmental impact assessment, applied for consent and provided an environmental statement, a public consultation must be carried out on the environmental statement. The consultation includes the consultation bodies and other organisations that ONR may wish to consult and local people. The licensee must publicise the environmental statement in at least one newspaper local to the site, make copies of the environmental statement available for public inspection at one or more locations near the site, and invite people to write to ONR with their views.

Public consultation on further information

If ONR is of the opinion that further information is necessary before it can make its decision, then ONR may request such information from the licensee. In such a case, public consultation is carried out on the further information under arrangements similar to those described above.

Evidence to verify information in the environmental statement

ONR may ask the licensee to produce evidence to verify any information in the environmental statement. Evidence is not subject to public consultation.

Change or extension to a decommissioning project

If there is a change or extension to any decommissioning reactor project that may have significant adverse environmental effects, the licensee must apply to ONR for a determination as to whether the change or extension should be subject to an environmental impact assessment. The licensee shall not commence or continue with

the change or extension to the project, or any other part of the project that ONR may direct, until a determination is made.

This requirement is relevant irrespective of whether the project began after or before EIADR came into force (that is, whether consent for the project was granted under EIADR, or whether the project began before November 1999 and so consent was not required). If a positive determination is made, the licensee must apply for consent and provide an environmental statement on the project to support the application. A public consultation must be carried out on that environmental statement. Regulation 13 of EIADR deals with changes or extensions to projects.

Effects of decommissioning on other countries

EIADR contains arrangements for consultation with other States party to the agreement on the EEA if a decommissioning project is likely to have significant adverse environmental effects on those States. The consultation is through the Secretary of State with the lead for the EIA Directive. These arrangements apply to new decommissioning projects, and to any existing projects needing changes or extensions that require an environmental impact assessment.

Granting consent and attaching conditions

At the end of the public consultation on the environmental statement including further information or evidence (if requested), ONR must take into account the views of consultees and, if appropriate, responses from EEA States, when making its decision on whether or not to grant consent for a decommissioning project under regulation 8(3) of EIADR. If ONR decides to grant consent, ONR may attach conditions to the consent as may appear to it to be necessary or desirable in the interests of limiting the impact of that project on the environment under regulation 8(4) of EIADR.

Transparency of ONR's decision on an application

At the end of the process when ONR has made its decision on whether or not to grant consent for a new decommissioning project to start or a change or extension to an existing project, ONR must:

- inform the licensee and the Secretary of State of the decision under regulation 11(a); inform the public by publishing a notice in a local newspaper unless by other means as appropriate in the circumstances under regulation 11(b); and make available a statement (a report) for public inspection under regulation 11(c) of EIADR.

This report must contain:

- the content of ONR's decision and, if consent is granted, the content of any conditions attached to that consent; the main reasons and considerations on which the decision is based;
- and a description, where necessary, of the main measures that the licensee will take to avoid, reduce and if possible, offset any major adverse effects of the decommissioning project on the environment.

Also under regulation 11(c) of EIADR, ONR must provide information regarding the right to challenge the validity of the decision and the procedures for doing so. The mechanism in place to challenge decisions made by ONR under EIADR, is via the judicial review process.

Annex 6

ONR recommendations contained within 2007 Pre – Application Opinion

Detailed points on issues within the scoping report – to be addressed in the environmental statement

As a result of its own analysis, together with comments from consultees, it is HSE's opinion that the licensee should consider the detailed points, listed below, on the issues within the scoping report submitted by the licensee. Some of these detailed points are not explicitly described but may be mentioned within the scoping report. The level of detail provided in the environmental statement regarding issues covered by other legislation, should be consistent with that described in this Appendix.

Air quality and dust

The environmental impact assessment should include adequate consideration of the effects of dust arising from demolition works.

The environmental impact assessment should include assessment of dust emissions from decommissioning works at relevant receptor locations within and around the site boundary.

Regarding monitoring of fugitive dusts, consideration should be given to:

- Providing an indication as to whether dusts arising from decommissioning activities may contain radioactive material; and
- Including assessment of how fugitive dust emissions will be controlled and monitored away from site and what mitigation measures will be employed to minimise dust impact.
- HSE recognises that Imperial College are intending to undertake further assessments to estimate dust emissions from decommissioning works.

Archaeology and cultural heritage

The environmental impact assessment should include adequate consideration of the impacts associated with archaeology and cultural heritage.

*HSE was the enforcing authority for EIADR until 31 March 2014. Responsibility transferred to ONR on 1st April 2014.

Ecology

- Consideration should be given to the inclusion of the following areas in the environmental impact assessment:
- Windsor Forest and Great Park Special Area of Conservation (SAC);
- Thursley, Ash, Pirbright & Cobham Special Area of Conservation (SAC); and
- Thames Basin Heaths Special Protection Area (SPA).

HSE would expect such an assessment to consider (where relevant) the effects of air quality and dust (radioactive and non-radioactive), surface waters and geology, hydrogeology and soils (including groundwater impacts) on ecological receptors.

Consideration should be given to undertaking field surveys during appropriate periods of the year, to determine the extent of inhabitation of the study area by protected species, in particular:

- Undertaking a habitat survey to identify any important habitats and to note any species listed under national (UK) or local Biodiversity Action Plans;
- Determining whether protected and other animal species are present in the assessment area, and if so, including in the assessment for example bats and badgers;
- Determining whether protected and other plant species are present in the assessment area and if so, including in the assessment;
- Assessing patterns of breeding, feeding and roosting of birds within the site itself;
- Assessing whether protected and other species of birds are present; and
- Demonstrating a commitment to agree surveys and mitigation measures with relevant regulators when and if appropriate.

Consideration should be given to:

- Assessing the impact on sensitive receptors and habitats within close proximity to the security boundary;
- Assessing the impacts on flora and fauna known to occur, for example badgers; and

- Where relevant assessing the impact of air pollutants like nitrogen oxides (and nitrogen deposition), sulphur dioxide, volatile organic compounds, particulate emissions and dust on sensitive species that may be present.

HSE would expect such an assessment to include consideration of the impacts arising from the project such as air emissions and dust (radioactive and non-radioactive), surface water runoff, spillages, site lighting and traffic. Measures for mitigation should be included.

Regarding the environmental effects of the decommissioning project on protected species identified within the study area, consideration should be given to:

- Giving an indication of how effects will be monitored; and
- Including information as to how effects will be avoided, off-set or mitigated.

Geology, Hydrogeology and soils

The site geology and hydrogeology should be described and consideration should be given to:

- Providing baseline information for contaminated material on- (and if relevant off-) site;
- Assessing the effects of temporary storage of waste (contaminated or non-contaminated) on soils and hydrogeology;
- Assessing the effects of the decommissioning works on land, groundwater and potable water in the local sphere of influence; and
- Assessing the proposed actions that may mobilise existing contaminants in the ground.

HSE recognises that Imperial College are developing a sampling plan for surveying land quality on the licensed site. Relevant information from the plan should be included in the environmental statement.

Landscape and visual

Consideration should be given to the assessment of visual impacts (temporary and permanent) and include both positive and negative effects.

If additional lighting is used, consideration should be given to providing details of the location, height, design, sensors and luminance of all floodlighting, together with the proposed measures to limit obtrusive glare to nearby properties.

Noise and vibration

Consideration should be given to:

- Providing baseline data for on-site and off-site noise levels at the most sensitive receptors;
- Providing estimated noise levels during the project for relevant off-site receptors for example nearby residential properties, listed buildings; and
- Consideration should be given to ecological and other effects of transient sources of noise e.g. during demolition.

Socio-economic

Consideration should be given to assessing the impact on Public Rights of Way, and where necessary consideration should be given to mitigation measures.

Consideration should be given to providing details of the numbers of contractors that will be required along with positive and negative impacts on local community and local economy.

Surface waters

Consideration should be given to providing details of how the current drainage system will cope with the drainage load during and after site clearance.

Consideration should be given to providing a summary of the measures to prevent spillages or leaks into the drainage system from hazardous substances. If hydrocarbons are to be stored temporarily on site, compliance with relevant legislation should be provided.

Traffic and transport

Consideration should be given to:

- Including assessment of traffic related pedestrian and cyclist safety;
- Assessing the intensity of changes in traffic flow and the impact on local road network;

- Assessing the impact of increased traffic flow on relevant parts of the local roads (on and off-site); and
- Assessing the impact of increased levels of traffic on the campus.

Civil engineering works and secondary developments

The environmental statement should provide a clear picture of the number and purpose of buildings and facilities required to be constructed during the project, together with a summary of the resulting environmental impacts and the need for permissions under Town and Country Planning legislation. Consideration should be given to:

- Providing indications of likely size, location, planning status and mitigation measures associated with any proposed waste management / handling facility or waste store;
- Noting that processing of low level waste may reveal intermediate level waste and including the latter when considering designs for the waste management / handling facility; and
- Providing a clear indication of any ancillary buildings or facilities that are likely to be required during the decommissioning project.

Consideration should be given to providing information on the programme of other civil engineering works, which are to be undertaken on site during the project. In particular this might include information on:

- Specific engineering tasks to be carried out, for example, dismantling of plant, demolition of existing buildings, excavation work, piling, use of explosives; and
- The likely timing of these tasks.

Radioactive waste disposal

Consideration should be given to:

- Providing indicative radioactive discharge data for the project;
- Indicating outline radioactive discharge profiles for the project;
- Providing an indication of removal of radioactive material from site, in terms of the proportion of the total present at the start of the project;

- Scoping the environmental effects of the options proposed for the storage of intermediate level waste;
- Providing an indication of the amount of radioactive waste that will need to be stored on site or transported to another nuclear licensed site for storage; and
- Providing a summary of measures to prevent spillages or leaks of radioactive material into the environment, together with reference to the legislation which covers such matters.

Treatment of non-radioactive wastes

Consideration should be given to:

- Including in the assessment, the potential for hazardous wastes to also be radioactive;
- Providing estimates of the quantities of hazardous wastes, and likely disposal routes, including an indication of the amounts of such waste to be stored on site;
- Providing information on the management of hazardous wastes e.g. asbestos together with reference to the legislation which covers such matters;
- Providing information regarding the potential for recycling of waste materials;
- Summarising the processing of waste materials; and
- Identifying potential discharges arising from waste treatment processes.

Impact assessment methodology

The environment statement should include details of the methodology used to carry out any of the investigations or surveys.

Resource use

Consideration should be given to expanding the positive effects resulting from the reduced use of resources.

Issues covered by other legislation

A number of issues are covered by existing legislation, and these will continue to be enforced under this legislation. These issues include:

- Continuity of site management;

- Site security and integrity, including human and animal intrusion;
- Fire safety, including safety of additional contractors housed in temporary accommodation, procedures for dealing with incidents involving hazardous materials, and liaison with the local fire service;
- Emergency arrangements;
- Safety of plant, including reactor dismantlement;
- Final delicensing of the site;
- Transport safety, including identifying standard road routes (with implications for congestion of narrow lanes), and dealing with incidents involving vehicle fires and leakage of hazardous material;
- Health and safety aspects of dust control from, for example, masonry crushing on the site;
- Exposure to ionising radiation;
- Release of radioactive material and non-radioactive wastes; and
- Secondary developments.

The environmental statement should include reference to the above and sufficient detail to give a clear picture of the scope of issues involved and their relation to the environmental impact assessment. However, where appropriate, reference should be made to the relevant legislation and related submissions to the regulatory authorities, where the licensee has provided or will provide greater detail.

Points on other matters – whose consideration could be of benefit to the environmental statement

The licensee may wish to take into account the points listed below in the environmental statement, although these are not explicitly required by EIADR.

Consideration may be given to:

- Including strategies for monitoring the actual impacts of measures to be taken to avoid, reduce and, if possible, remedy significant adverse effects on the environment. This could cover gathering base-line data, and monitoring during the different stages of the project to demonstrate the effectiveness of the measures taken or to identify the need for measures to be reviewed and amended;

- Involving the local population in the decommissioning programme, in particular, discussing concerns and expectations with a view to benefiting the community;
- Providing details of engagement with relevant stakeholders that have or will be approached for information e.g. statutory consultees, environmental organisations, members of the public;
- Providing a summary matrix of the different activities associated with the proposed work and the range of environmental parameters potentially affected, with some form of ranking of the potential significance of any impact;
- Providing a clear indication as to whether the project is likely to have significant effects on the environment of another European Economic Area State;
- Ensuring that the policy framework described includes up to date information regarding any relevant central government policy;

Using photographs, photomontage, figures and diagrams where appropriate to clarify text.

Examples of such include:

- A map showing the locations of off-site noise monitoring locations; and
- Indication of facilities, such as footpaths, on diagrams showing the identified Zones of Visual Influence; and
- Ensuring that potential benefits to the environment arising from the decommissioning project are adequately addressed.

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